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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

JEAN-LUC HOFFMANN et al — Group Art Unit: 1725

Serial No.: 09/582,625 — Examiner: L. Tran

Filed: August 8, 2000

For: ALUMINIUM ALLOY STRIPS WITH HIGH SURFACE HOMOGENEITY AND METHOD FOR MAKING SAME

RESPONSE

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

The following remarks are submitted in response to the Office action mailed February 20, 2003.

Applicants' attorney is appreciative of the interview granted by the Examiner on May 21, 2003. At that interview, distinctions between twin roll casting and belt casting were discussed as they apply to the claimed invention.

Claims 21 through 25, 27 through 34, 36 through 40, 42 through 45 and 47 through 50 have been rejected under 35 USC 103 over Sawada et al in view of DT 24 43 068 (Althoff et al).

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703 412-1155

The claimed invention is directed to an aluminum alloy strip with high surface homogeneity produced by twin roll casting, and having an upper surface with particular qualities defined by the claims.

Sawada et al is directed to a method for producing a planographic printing plate support and specifically an aluminum support having excellent electrolytic roughness. It is well known that planographic printing plates must exhibit a well controlled surface roughness known as a satin-type finish; if the roughness is too low and the plate has a mirror-type finish, printing ink will not adhere to the surface of the plate. The object of Sawada et al is to produce a planographic printing plate excellent in both the aptitude to roughening and in external appearance, as disclosed at column 2, lines 56 through 58. At column 1, lines 14-17, Sawada et al state that it is generally necessary for the aluminum plate to have a moderate adhesive property to a photosensitive material and a moderate water retentivity.

Accordingly, the goal of Sawada et al, to obtain rough plates, is different from the goal of the claimed invention which is to obtain plates having a mirror-type finish. It is noted, however, that Sawada et al appears to use a twin roll casting process to obtain the plates of

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interest and the Office action alleges that it would be obvious to recess the upper lip of the injector in Sawada et al based upon the teaching of Althoff et al.

Althoff et al, however, does not relate to twin roll casting, but instead to belt casting in which rotating steel belts form the top and bottom of a rectangular mold. The melt can be fed into the mold by an open gutter or a closed jet. Preferably, the metal is in contact with the ingot mold along an arc corresponding to an angle of 1 to 15°, at least upstream of the upper driving roll. This is the embodiment shown in Figures 1 and 2, which form the basis for the present rejection. However, Figure 3 also shows an embodiment of the invention in which both the upper and lower lips of the injector are recessed, and this embodiment also results in the improvement which has been alleged by Althoff et al.

However, the embodiment shown in Figure 3 is the usual embodiment for twin roll casting, so one of ordinary skill in the art would expect any improvement to be obtained according to the teaching of Althoff et al to be obtained in the regular course of twin roll casting. There would be no reason to believe that the embodiment shown in Figures 1 and 2 would be an improvement over the embodiment shown in Figure 3, yet the results of the invention are based upon Applicants'

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discovery that by recessing the upper lip of the injector by at least 2 mm with respect to the lower lip, the upper surface of the sheet produced has dramatically higher quality.

Moreover, Applicants submit that one of ordinary skill in the art familiar with twin roll casting would not look to a reference directed to belt casting for an improvement in quality. It is to be noted from the figures of Althoff et al that the center of the metal sheet solidifies well downstream of the axes of the rolls. This arrangement would be impossible in twin roll casting, because the liquid metal would pour down the lower roll instead of forming a strip. In twin roll casting, the solidification of the strip must take place upstream of the axes of the rolls.

Moreover, the surface streaks which appear during belt casting have a different origin, air trapped between the belt and the metal strip and vibrations of the metal belt, than the streaks which appear in twin roll casting which occur due to oscillations of the liquid metal level. Indeed, vibrations of the belt are the single most important reason why belt casting is not used for the manufacture of aluminum strip with the claimed surface appearance.

Thus, Applicants submit that one of ordinary skill in the art would not combine the teachings of Althoff et al

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with those of Sawada et al because the technologies are far different, and even if one made such a combination the result would be no different than the arrangement which is normally used with twin roll casting.

Withdrawal of this rejection is accordingly requested.

Claims 26, 35, 41, 46 and 51 have been rejected under 35 USC over Limbach et al in view of Althoff et al.

Limbach et al teaches the production of an aluminum strip by rolling to obtain a thickness of 4 to 0.1 mm. The strip, however, is described as being uniformly rough by virtue of a rippled topography and is therefore quite different than the strip which is presently claimed. There is no disclosure or suggestion which would lead one of ordinary skill in the art to apply the teachings of Althoff et al to those of Limbach et al with the expectation of producing a sheet with high surface homogeneity, especially since a sheet with high surface homogeneity is specifically contrary to the teachings of Limbach et al.

Moreover, the sheet produced by Limbach et al is not produced either by twin roll casting or by belt casting, or by any continuous casting method at all; conventional casting

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which is used according to Limbach et al produces a sheet with a totally different microstructure.

Accordingly, Limbach et al does not teach obtaining a sheet by twin roll casting and does not teach obtaining a sheet with high surface homogeneity, and there is no disclosure or suggestion which would lead one of ordinary skill in the art to utilize the teachings of Althoff et al in combination with Limbach et al, since Althoff et al utilizes a different casting method.

Withdrawal of this rejection is accordingly requested.

In view of the above remarks, Applicants submit that the present application is now in condition for allowance. An early allowance of the application is earnestly solicited.

Respectfully submitted,

Ira J. Schultz
Registration No. 28666

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DENNISON, SCHULTZ & DOUGHERTY
612 CRYSTAL SQUARE 4
1745 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VIRGINIA 22202-3417
703 412-1155